

UNIVERSITY OF BIRMINGHAM

English Language and Applied Linguistics

Postgraduate Distance Learning programmes

ESSAY & DISSERTATION DECLARATION OF AUTHORSHIP

Student ID number	1650583
Module Number (1-6)	M3
Title of Degree Programme:	MA Applied Linguistics
Title of Module:	Functional Grammar
Date Submitted	31 st January 2017
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Date: January 31st, 2017

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FG/16/01

Apply the principles of systemic linguistic analysis explored in this module to a comparison between two short texts or text extracts (up to 500 words each) of your own choice. The texts should have similar subject matter but be written for different audiences. For example, you might compare an academic text about a given country with a tourist brochure, or a fairly technical account of a scientific, medical or political topic with a news report of the same topic. These are examples only, and you are free to select texts on any topic. You should demonstrate through analysis of samples from the texts that the texts differ in terms of Tenor and the interpersonal metafunction. You should then consider Field and the experiential (ideational) metafunction and/or Mode and the textual metafunction, and demonstrate through selective analysis to what extent these are similar or different in the two texts.

You will need to supply copies of the two texts (scans of the original or transcripts). Please ensure that you supply complete details as to the origin of the text (author, date, publication, section / page numbers, etc.).

1. Introduction

Systemic functional grammar (SFG) gives a perspective as to how language is used in a particular context by identifying linguistic patterns, and by attempting to understand language as a social practice (Eggins 2004). Through the framework and terminology of Halliday's SFG (Halliday & Matthiessen 2014), this paper shall conduct a comparative study of two text extracts, one from a newspaper (*The Washington Post* 2016), and the other from a scientific journal (*Nature Climate Change* 2016). Although both texts have similar subject matter, the Paris Agreement's new temperature goal, they have been written for different audiences.

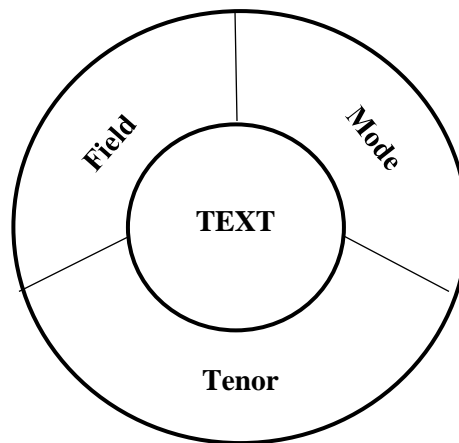
To begin this study, section 2 shall explore the functional aspects of SFG, of which the relationship between text and context and the three elemental components of context. The texts under investigation will be presented in section 3, as well as the signification of register (Halliday & Hasan 1989). Sections, 4, 5 and 6 shall explore Halliday's three metafunctions (Halliday & Matthiessen 2014): an interpersonal comparison of the texts will be performed in section 4, an experiential comparison realized in section 5, and a textual comparison in section 6. To conclude, section 7 will consider overall similarities and differences between both texts.

2. Functional grammar and text analysis

Functional grammar is a tool used to analyze and ‘explore the mechanisms of how we use language to get ordinary things done’ (Thompson, 2013:60). Particularly, SFG places the purpose of language as fundamental and functional – what language does, and how it does it.

Two different contexts exist within any text, written or spoken: Halliday’s ‘context of culture’ and ‘context of situation’ (Butt et al., 2000:3). SFG attempts to explain the relationship between text and context and to show how *context of culture* is related to *context of situation*. The focus of this paper shall be on *context of situation*, a term used ‘to cover the things going on in the world outside the text that make the text what it is’ (ibid.:4). Three different elements compose this context – Field, Tenor, and Mode. Field signifies ‘what is to be talked or written about’; Tenor implies ‘the relationship between the speaker and hearer...writer and reader’; Mode indicates ‘the kind of text that is being made’ (ibid.:5).

FIGURE 1: *Context of Situation*




Butt et al. (2000:4)

Halliday’s SFG (Halliday & Matthiessen 2014) states that these three components are realized by the metafunctions of language: the experiential metafunction, or how ‘[w]e use language to talk about our experiences of the world’ (Thompson, 2013:30); the interpersonal metafunction, or how we ‘interact with other people...establish and maintain relations with them...influence their behavior’ (ibid.); the textual metafunction, or how a message is organized and how language carries these messages (Ravelli 2005). Each metafunction has different roles and does ‘more than

one thing at once’ within a text (Thompson, 2013:34). Figure 2 depicts the complex and ‘multi-functional’ relations between context and text (ibid.).

FIGURE 2: *The relation of context and text*

Situation	(realized by)	Text
Features of the context		Functional components of semantic system and lexico-grammar for realizing them
Field (what is going on) Tenor (who are taking part) Mode (role assigned to language)		Experiential meanings (Transitivity, naming) Interpersonal meanings (Mood, Modality) Textual meanings (Theme)

Halliday & Hasan (1989:26)

3. Texts under investigation

The two text extracts chosen for this study are: ‘The World is Racing to Stop Climate Change. But the Math Still Doesn’t Add Up’ (Appendix 1), the first page and a half from the Energy and Environment section of the newspaper, *The Washington Post* (WP), and published on November 3rd, 2016; ‘Science and Policy Characteristics of the Paris Agreement Temperature Goal’ (Appendix 2), part of the first page from the monthly scientific journal, *Nature Climate Change* (NCC), and published in September 2016. By applying Halliday’s SFG (Halliday & Matthiessen 2014), a comparative functional analysis shall be conducted in order to better understand how language is used in each text.

3.1. Register

A register is ‘a configuration of meanings...typically associated with a particular situational configuration of field, mode, and tenor’ (Halliday & Hasan, 1989:38). By comparing two texts from different registers, a news story and a scientific text, this paper attempts to show the characteristics typically associated with each register. In order to facilitate reading the different

analyses, all extracts, tables and figures have been color-coded in this paper: the WP text (Appendix 1) in light blue, and the NCC text (Appendix 2) in light pink.

4. Interpersonal comparison of the texts

The interpersonal metafunction ‘is a piece of interaction between speaker and listener’ (Halliday & Hasan, 1989:20), or in this case writer/reader. The use of the interpersonal metafunction depends on the Tenor of discourse in that it reveals the writer, the expected reader, and the kind of relationship between them (Ravelli 2005). In the WP text (Appendix 1), Tenor implies the relationship between journalist and reader, while in the NCC text (Appendix 2) it is between scientist and reader.

4.1. Mood

The Mood consists of two elements – Subject and Finite – and functions by carrying ‘the burden of the clause as an interactive event’ (Halliday & Matthiessen, 2014:150). One of the most noticeable ways in which the writer/reader relationship is construed is through the consistent choice of Mood as declarative statements in both texts. This kind of relationship may be considered as unequal since the writers of both texts only wish to give information without wanting to be further challenged. This may even suggest that the writers regard themselves as more knowledgeable than the readers.

The Subject, the nominal group, is held responsible ‘for the functioning of the clause as an interactive event’ (Halliday & Matthiessen, 2014:146). Table 1 shows the most frequently used Subjects in both texts, which have been identified as either exact words, synonyms, or a common subject matter. Only the most common Subject from each text will be discussed.

TABLE 1: *Comparison of Subject choice in texts*

<i>Washington Post</i>		<i>Nature Climate Change</i>	
Subject	Frequency in text	Subject	Frequency in text
the world	5	temperature goal	5
you	4	The Paris Agreement	2
math	4	UNFCC	2
The Paris Agreement	3	science	2
we	3	COP15	2

In the WP text (Appendix 1), *the world* (lines 1, 11, 14, 17) and its synonym, *the entire globe*, (line 3) occur the most frequently as Subject. The choice of Subject in this text establishes the writer's position that climate change concerns everyone, as seen in table 2, a point to be further discussed in section 5.2.

TABLE 2: *Subject choice, the world, in the WP text (Appendix 1)*

the entire globe	is	moving	fast to stop climate change (3).
the world	is	emitting	about 52.7 billion tons, or gigatons, of carbon dioxide equivalents per year as of 2014 (14)
Subject	Finite	Predicator	Complement
Mood		Residue	

In the NCC text (Appendix 2), the most common Subject makes reference to *temperature goal* (lines 5, 12, 14, 14, 15). The choice of Subject here reestablishes the main purpose of the text: the Paris Agreement's goal to hold worldwide temperatures to below 2 °C, as seen in table 3.

TABLE 3: *Subject choice, temperature goal, in the NCC text (Appendix 2)*

this 'not exceed' limit	was	taken up	by the G8 in 2009 (5).
limiting global warming to below 1.5 °C	would	come	with several advantages" (14).
Subject	Finite	Predicator	Complement
Mood		Residue	

The Finite connects the writer’s proposition to the context by signaling either past or present. The WP text (Appendix 1) is written primarily in the present tense, indicating an immediate call for action to control worldwide temperatures. The NCC text (Appendix 2) uses mainly the past tense to signal past events leading up to the Paris Agreement. Additionally, the Finite expresses polarity and indicates the choice between yes and no (Halliday & Matthiessen 2014). Whereas no negative polarity is employed in the NCC text, the WP text contains several instances of negative polarity, as seen in extract 1.

EXTRACT 1: *Negative polarity in the WP (Appendix 1)*

Line 2	But the math still <u>doesn’t</u> add up.
Line 9	and <u>it’s not</u> happening quickly enough.
Line 22	The promises countries have made under the Paris agreement <u>don’t</u> remotely get there.

The use of negative polarity in the WP text (Appendix 1) may be indicative of the writer’s need to refute what the reader thinks at that moment (Thompson 2012), while the absence of negative polarity in the NCC text (Appendix 2) may be suggestive of authority (Fang 2004).

4.2. Modality

This section attempts to examine any feelings and attitudes that may appear in a text by means of modality (Ravelli 2005). Modality – ‘the space between “yes” and “no”’ (Thompson, 2013:66) – completes the Mood. This space specifies the writer’s opinions and can range from low modality to high modality. Modals of probability are referred to as *modalization* (Halliday & Matthiessen 2014), while modals of obligation or inclination are referred to as *modulation* (ibid.). Figure 3 shows the occurrences of modality within both texts.

FIGURE 3: *Instances of modality*

	<i>The Washington Post</i>	<i>Nature Climate Change</i>
<i>modalization</i>	3	3
<i>modulation</i>	3	0

4.2.1. The Washington Post

As seen in figure 3, the WP text contains six instances of modality, three for each category (see Extracts 2 and 3). Thompson (2012:73) explains that modalization may occur in newspapers ‘as the writer ponders various aspects of the event and the possible implications, followed by a move to modulation as the writer explains what should be done’. This happens to be the case in the WP text (Appendix 1): the writer begins the story by contemplating the overly ambitious temperature goals of the Paris Agreement, and then shifts to suggesting what must be done to keep worldwide temperatures from rising. In the following lines of extract 2, the writer construes the event as involving probability.

EXTRACT 2: *Modalization in the WP (Appendix 1)*

Line 5	Yes, there’s also a U.S. election in there somewhere that <u>could</u> , er, complicate things.
Line 8	...you <u>can’t</u> get it back
Line 11	... <u>perhaps</u> the definitive study of how much the world is currently emitting

In line 5, the writer seems aware of what the reader might be thinking and agrees with it; the modal marker in line 11 indicates low probability. In line 8, the writer emphasizes the impossibility for something to happen in negative polarity – *can’t* – and indicates his need to negate what the reader might think at that point (Thompson 2013).

The shift from modalization to modulation occurs in the second half of line 11, where the writer begins to construe the event as involving obligation.

EXTRACT 3: *Modal shift – modalization to modulation – in the WP (Appendix 1)*

Line 11and how much it <u>can</u> emit to remain on course
Line 17	...the world <u>can</u> emit no more than 1,000 gigatons of carbon dioxide
Line 20	...we <u>need</u> to be emitting only 38.8 gigatons of carbon dioxide equivalents

In lines 11 and 17, *can* suggests ability and, in a sense, the writer gives permission to the reader. The italicized *can* in line 11 emphasizes what the writer says by making the obligation higher. In

line 20, *need* specifies the action that must be taken by everyone – high modality – and by employing *we* in the same line, the writer projects himself as joining with the readers in taking action to stabilize worldwide temperatures.

4.2.2. Nature Climate Change

As seen in figure 3, the NCC text contains only three instances of modalization, in which the writer construes the event as involving probability.

EXTRACT 4: *Modalization in the NCC text (Appendix 2)*

Line 6	The gradual adoption of specific warming limits by political bodies <u>can</u> be linked
Line 7	...and their relation to GMT increase <u>might</u> be best illustrated
Line 14	“limiting global warming to below 1.5 °C <u>would</u> come with several advantages”.

The lines in extract 4 express various levels of uncertainty about factors related to the new temperature proposals: ‘uncertainty is such an inherent part of climate science’ (Roman & Bosch, 2016:1160). *Can* in line 6 indicates low probability; in line 7, *might* ‘turns the clause from a categorical statement of fact, into one which may or may not occur’ (Ravelli, 2005:48); *would* in line 14 signifies the past form of *will*.

4.3. Interactant pronouns

One of the most salient differences between these two texts is through the use of interactant pronouns – *we/us/our*, *you/your* (Thompson 2012). While *we* and *you* appear many times in the WP text (Appendix 1), they are inexistent in the NCC text (Appendix 2).

FIGURE 4: *Usage of interactant pronouns*

	<i>Washington Post</i>	<i>Nature Climate Change</i>
<i>we/us/our</i>	3	0
<i>you/your</i>	4	0

adapted from Thompson (2012:84)

The pronoun *we*, which appears three times in figure 4, is inclusive because it refers to everyone. The writer uses this strategy to involve the reader in the text, and to help ‘normalize a set of beliefs and values which are projected as shared between the newspaper and the audience’ (Thompson, 2012: 87). This choice of Subject establishes the writer’s evaluation of who should be concerned in climate control.

TABLE 4: *Interactant pronoun, We, in the WP (Appendix 1)*

We	don't	see	emissions peaking by 2020 (10)
We	want	to hold	global warming to 1.5 C (20)
We	need	to be emitting	only 38.8 gigatons of carbon dioxide equivalents by the year 2030 (20)
Subject	Finite	Predicator	Complement
Mood		Residue	

The pronoun, *you*, ‘acts as a sign of the writer’s awareness of the addressee’ (Thompson, 2012: 86), and acts as an invitation to the reader to become involved in climate control.

TABLE 5: *Interactant pronoun, You, in the WP (Appendix 1)*

You	emit		a ton of carbon dioxide (8)
You	can't	get	it back (8)
You	want		to keep the planet at 2 degrees, and between 15 and 17 gigatons per year for 1.5 degrees (23)
Subject	Finite	Predicator	Complement
Mood		Residue	

In contrast, interactant pronouns do not appear in the NCC text (Appendix 2). As science strives to present information objectively (Fang 2004), a writer of this register ‘must distance him/herself from the text’ (ibid.:342), thereby avoiding interactant pronouns.

5. Experiential comparison of the texts

The experiential metafunction depends on Field. ‘Our language builds up pictures of reality – in terms of things...and events and circumstances’ (Butt et al., 2000:46). The experiential metafunction makes reference to what is happening in the world, and how these happenings are represented: ‘Who does what to whom under what circumstances?’ (ibid.). Three choices of the transitivity system – Process, Participants, Circumstances – frame the experiential meaning and shall be explored in this section, along with the effects of grammatical metaphor.

5.1. Process types

‘Our most powerful impression of experience is that it consists of a flow of events, or “goings-on”’ (Halliday & Matthiessen, 2014:213). These events construe different senses of action. Although the Process – the verbal group – acts as the central element of the experiential meaning, transitivity ‘refers to a system for describing the whole clause’ (Thompson, 2013:94). The Process types can be seen in tables 6 and 7.

TABLE 6: *Process types occurring in the WP text (Appendix 1)*

Process type	Number of clauses (independent/dependent)	Percentage
Material (<i>emit, move, accumulate, hold</i>)	20	41%
Relational (<i>is, are, have, happening</i>)	19	39%
Mental (<i>see, want, need</i>)	4	8%
Verbal (<i>say, find</i>)	3	6%
Existential (<i>is</i>)	3	6%
TOTAL	49	100%

TABLE 7: *Process types occurring in the NCC text (Appendix 2)*

Process type	Number of clauses (independent/dependent)	Percentage
Material (<i>identify, develop, come, establish</i>)	25	64%
Relational (<i>is, consider, was</i>)	7	18%
Verbal (<i>conclude, express, inform</i>)	5	13%
Mental (<i>require, regard as</i>)	2	5%
TOTAL	39	100%

Material processes construe *doing* or *happening* and occur the most frequently in both texts. Relational processes, which also occur regularly in both texts, relate ‘a participant to its identity or description’ (Butt et al., 2000:56). Verbal processes, although less frequent in the texts, construe saying and may be used to influence the reader’s opinion (Chen 2005). The verbal processes of the NCC text (Appendix 2) – *conclude, express, inform, confirm* – ‘promote in the reader a feeling that the person whose words are being reported is wise, authoritative’ (ibid.:39). Those of the WP text (Appendix 1) – *say, find* – are neutral in nature: ‘the writer chooses neither to offer endorsement nor disparagement of what the person being reported is saying’ (ibid.:38).

5.2. Participant roles

From the experiential perspective, the Participant – generally a nominal group – either causes a Process to occur or is affected by it (Ravelli 2005). The two texts contain both concrete and abstract Participants. *The world* is the most common concrete Participant in the WP text, and only appears as the Actor in material Processes.

TABLE 8: *material Process: the world as Actor in the WP (Appendix 1)*

Line #	Actor	Pr:material	Pr:material	Goal
1	The world	is racing	to stop	climate change.

Line #	Actor	Pr:material-	Circ:manner	-Pr:material
11	the world	is	currently	emitting,

Line #	Actor	Pr:material	Goal	Circ:location
14	the world	is emitting	about 52.7 billion tons, or gigatons of carbon dioxide equivalents per year	as of 2014.
17	the world	can emit	no more than 1,000 gigatons of carbon dioxide	from the year 2011 onwards — the famous carbon budget.

In table 8, *the world* causes processes to occur, which may suggest the writer’s belief that people have a direct involvement in the climate debate: as both the cause of rising temperatures and a possible solution to the problem.

In the NCC text (Appendix 2), the majority of Participants are concrete: the Paris Agreement, an official governmental body, climatic details, the scientific community. Table 9 contains some examples.

TABLE 9: *concrete Participants in the NCC text (Appendix 2)*

Line #	Actor	Pr:material	Goal	
1	The Paris Agreement	sets	a long-term temperature goal...	

Line #	Circ:location	Carrier	Pr: rel, att	Attribute
3	In 1996,	the EU Environment Council	was	first...

Line #	Goal	Pr:material	Actor	Circ:location
5	...this 'not exceed' limit	was taken up	by the G8	in 2009.

The most common abstract Participant in the WP text, *It*, occurs often and is used in relational processes.

TABLE 10: *abstract Participant, It, in the WP text (Appendix 1)*

Line #	Carrier	Pr: rel, att	Attribute
9	"It	's	just too little
9	...it	's not happening	quickly enough,"
18	...it	's	2016 already,

In table 10, *It* positions the reader towards the most significant information (Thompson 2013). In line 9, *It* refers to a Participant already mentioned – the new temperature goal; in line 18, *It* mentions characteristics. Finally, by employing *It*, the WP writer ‘claim[s] everything as “fact”’ (Hawes & Thomas, 2012:180), which may not be acceptable to do in scientific writing (ibid.).

The NCC text (Appendix 2) contains many abstract Participants, resulting in the reader being unsure as to *who* or *what* the Participant may be. This point shall be explored in more detail in section 5.4.

5.3. Circumstances

Circumstances give further information about the event (Ravelli 2005), and tend to answer *how*, *where*, *when* or *why*. Circumstances appear regularly in both texts, though are the most frequent in the NCC text (Appendix 2). In the WP text (Appendix 1), Manner appears the most and adds key details regarding worldwide temperature increases; in the NCC text (Appendix 2), Time is naturally the most frequent Circumstance, as it recounts past events leading up to the Paris Agreement. Tables 11 and 12 show the types of Circumstances occurring in both extracts, as well as their frequency.

TABLE 11: *Circumstances occurring in the WP text (Appendix 1)*

Circumstance	Frequency in text	Percentage
Manner (<i>fast, steadily, already, a good bit</i>)	8	40%
Extent (<i>per year, for 2 degrees C</i>)	5	25%
Time (<i>on Friday, as of 2014, in 2030</i>)	4	20%
Place (<i>in Marrakech, Morocco, in the atmosphere</i>)	3	15%
TOTAL	20	100%

TABLE 12: *Circumstances occurring in the NCC text (Appendix 2)*

Circumstance	Frequency in text	Percentage
Time (<i>in 1996, in 2001, in 2009, at the same time</i>)	8	31%
Extent (<i>to well below 2°C, the 1.5°C limit</i>)	7	27%
Manner (<i>steadily, with a view, eventually</i>)	7	27%
Place (<i>at the COP16, in Cancun</i>)	3	12%
Cause (<i>for all RFCs at lower levels</i>)	1	4%
TOTAL	26	100%

5.4. Grammatical metaphor

Grammatical metaphor is defined as the ‘substitution of one grammatical class...by another’ (Halliday, 2003:79). This substitution, known as *nominalization*, ‘turn[s] an event into a noun’ (Butt et al., 2000:75). Another noticeable difference between the two texts is the ever-present

nature of nominalization in the NCC extract (Appendix 2), which can have both positive and negative effects on the text.

EXTRACT 5: *Nominalization in the NCC text (Appendix 2)*

Line 2	<u>The adoption</u> of the LTTG in the Paris Agreement stems from
Line 9	Informed by <u>the conclusions</u> of the IPCC AR4
Line 10	...first was <u>the emergence</u> of a long-term goal agreed at head-of-government level

Extract 5 shows that scientific writing tends to prefer nouns (Fang 2004). On the one hand, this allows science writers ‘to point out, count, describe, classify and specify further and further’ (Butt et al., 2000:75). In this way, nominalization plays a significant role as a persuasive element within a text. ‘A nominalized process has been made **non-negotiable**...Science aims to establish not only timeless truths, but also unassailable, certain truths’ (Thompson, 2013:246).

On the other hand, these statements may be problematic to the reader in that the true meaning of the text is obscured: ‘semantic information is lost when clausal expressions are replaced by nominal ones’ (Halliday, 2003:78). Fang (2004:340) notes that ‘nominalization suppresses agency, hiding the party responsible’. In extract 5 the reader remains unsure as to *who* or *what* did what. Thompson (2013:245) further explains that this occurs because ‘nominalization is in harmony with the ideology of science...[making] it easy for processes to be **de-personalized**: to be expressed without the human doer’.

6. Textual comparison of the texts

The textual metafunction is associated with the dimension of Mode, and ‘concerns the way the speaker indicates how the clause being produced is to be related to the linguistic and non-linguistic context’ (Fries, 2005:118). The organization of any message, spoken or written, is important. ‘A text lacking organization lacks meaning’ (Ravelli, 2005:51). In this section, a clause-by-clause textual analysis shall be performed to expose the most common thematic patterns of both excerpts.

6.1. Theme

‘Theme is the element that serves as the point of departure of the message; it is that which locates and orients the clause within its context’ (Halliday & Matthiessen, 2014:89). Fries (2005:118) further defines Theme as what is ‘up to and including the first constituent that comes from the experiential metafunction’. Since Theme functions by situating the reader to the ‘remainder of the message’ (Halliday & Matthiessen, 2014:89), the Rheme, the writer’s choice of what takes first position of the clause is central.

Table 13 contains a selection of Themes from both texts. Although it does not comprise all of the Themes from these texts, some of the most salient differences have been highlighted.

TABLE 13: *Comparison of Themes in texts*

<i>The Washington Post (Appendix A)</i>	<i>Nature Climate Change (Appendix B)</i>
(Yes, there	In 1996,
But this flurry of activity	Eventually, this ‘not exceed’ limit
once you	The gradual adoption of specific warming limits by political bodies
you	Although not comprehensive,
It	Informed by the conclusions of the IPCC AR4,
and it	Although COP15 itself was widely regarded as a failure,
If we	First
Here	Second, and directly linked
Warning	The hold below 2 °C goal
If you	Although this led to little or no reaction in scientific circles,
We	At the same time

adapted from Ravelli (2005:56)

6.1.1. *The Washington Post*

The comparison of Themes in table 13 reveals that the WP text (Appendix 1) appears as a relatively informal, almost spoken text (Ravelli 2005), and one that seems to be more person-oriented. The

relaxed nature of this text may result from textual and topical Themes, some of the most recurring Theme choices here. A textual Theme – *because, once, and, if, but* – implies that ‘[t]his kind of linking mimics the dynamic organization of spoken language, suggesting an easy and casual flow between ideas’ (Ravelli, 2005:55). Some writers avoid ‘textual Themes at the beginning of sentences’ (ibid.:55), though this proves not to be the case in this text.

TABLE 14: *textual Theme as departure in the WP text (Appendix 1)*

Line 6	But this flurry of activity nonetheless faces a grim mathematical reality.	
	textual	Topical
	Theme	Rheme

Line 9	and it 's not happening quickly enough	
	textual	topical
	Theme	Rheme

Line 20	If we want to hold global warming to 1.5 C	
	textual	topical
	Theme	Rheme

Topical Themes – realized by either a Participant, a Process or a Circumstance – occur in the thematic position either with textual Themes (see Table 14) or alone (see Table 15).

TABLE 15: *topical Theme as departure in the WP text (Appendix 1)*

Line 8	You can't get it back	
	topical	
	Theme	Rheme

Line 20	we need to be emitting only 38.8 gigatons of carbon dioxide equivalents by the year 2030.	
	topical	
	Theme	Rheme

Unmarked Theme completes this section on recurring thematic choices. A Theme is unmarked when the Theme and Subject are the same (Thompson 2013). Therefore, the unmarked Theme choice naturally coincides with the Mood of the text, as seen in table 16.

TABLE 16: *unmarked Theme – Mood in the WP text (Appendix 1)*

The Paris climate agreement	enters		into legal force on Friday <i>(4)</i> .
Here	are		the details <i>(13)</i> .
The emissions gap	is		therefore between 12 and 14 gigatons per year <i>(23)</i> .
Subject	Finite	Predicator	Complement
Mood		Residue	
Theme	Rheme		

6.1.2. Nature Climate Change

The comparison of Themes in table 13 subsequently reveals that the NCC text creates a much more formal and impersonal effect. The length of the Themes may increase the formality of the text (Fang 2004): ‘themes in scientific writing are most often realized by nouns, many lengthy’ (ibid.:341). As for the impersonal feeling, scientific language ‘has the effect of making the [reader] feel excluded and alienated from the subject-matter’ (Halliday, 2003:69). Rather than concentrating on *who*, as in the WP text, the thematic choices in the NCC text focus on *how* and *what* (see Table 13).

One of the thematic priorities of the writers in the NCC text (Appendix 2) is to ‘draw attention to the special status of [the] clause’ (Ravelli, 2005:55). Marked Themes (Halliday & Matthiessen 2014) allow writers this possibility and emerge as one of the dominant textual components. Marked Themes ‘are those where the topical Theme and Subject are realized by different elements’ (Ravelli, 2005:55), such as an Adjunct. Table 17 demonstrates how the NCC writers organize the text and draw attention to it by using Adjuncts as Theme.

TABLE 17: *Adjunct as Theme in the NCC text (Appendix 2)*

3	In 1996,	the EU Environment Council was first to identify a global mean temperature (GMT) increase of 2 °C above pre-industrial levels as a limit not to be exceeded,
5	Eventually,	this ‘not exceed’ limit was taken up by the G8 in 2009.
8	With scientific insights steadily progressing,	assessments based on the IPCC’s Fourth Assessment Report (AR4) and Fifth Assessment Report (AR5) have identified higher risks for all RFCs at lower temperature levels.
15	At the same time,	substantial research gaps with regard to 1.5 °C science were identified.
Line #	Theme	Rheme

The Adjuncts in table 17 have multiple functions in the text. First, they organize the text as a chronological account (Thompson 2013). Then, by focusing on *how*, they reveal ‘information which is being presented as “newsworthy”’ (Fries, 2005:125).

Another recurring Theme choice is dependent clause as Theme, which occurs when dependent clauses ‘are placed before the dominant clauses they are dependent on for thematic reasons: they serve to specify a local context within which what follows is interpreted’ (Matthiessen, 2002:237).

TABLE 18: *dependent clause as Theme in the NCC text (Appendix 2)*

9	Informed by the conclusions of the IPCC AR4,	approximately 100 countries at the UNFCCC Copenhagen Conference (COP15) in 2009 were calling for warming to be limited to below 1.5 °C relative to pre-industrial levels.
10	Although COP15 itself was widely regarded as a failure,	two politically durable outcomes from the Copenhagen Accord have ultimately translated into the Paris Agreement:
13	Although this led to little or no reaction in scientific circles,	a science-based review process under the UNFCCC was established: the structured expert dialogue (SED)
Line #	Theme	Rheme

Finally, unmarked Themes complete this section on important thematic choices in the NCC text (Appendix 2). In lines 1 and 2 of table 19, the unmarked Themes function by making the *what*

known. In lines 10 and 11, they function by ordering the text and leading the reader from one clause to the next.

TABLE 19: *unmarked Theme in the NCC text (Appendix 2)*

1	The Paris Agreement	sets a long-term temperature goal of holding the global average temperature increase to well below 2 °C,
2	The adoption of the LTTG in the Paris Agreement	stems from a long-standing climate policy debate.
10	First	was the emergence of a long-term goal agreed at head-of-government level, expressed then as an aim to hold the increase in warming below 2 °C,
11	Second, and directly linked,	was the agreement to review the ‘hold below 2 °C’ long-term goal with a view to strengthening it, addressing the 1.5 °C limit
Line #	Theme	Rheme

7. Overall comparison of the two texts: similarities and differences

The analyses of the metafunctions in sections 4 through 6 have revealed both similarities and differences between the two texts. Nevertheless, there appears to be more differences than similarities. A final comparison of the texts will be performed in this section.

7.1. Similarities

Most of the similarities between the two texts occur at the level of Field and the experiential metafunction. The most noticeable one is that both texts discuss the same event: the Paris Agreement’s temperature goal, along with any risks should the ideal global temperature not be implemented. Bell (1994) explains that science journalists and scientists have a common interest to inform the public about the imminent dangers of climate change. Additionally, the writers of both texts recount the event mainly through material Processes (see Tables 6 & 7), which gives ‘a sense of physical action...a strong sense of “doing”’ (Ravelli, 2005:37). Circumstances appear regularly in both texts to supply additional information about the event (see Tables 11 & 12).

Both texts also have one similarity in terms of Tenor: the writer/reader relationship is construed through declarative statements, thereby establishing unequal relationships.

7.2. Differences

The most salient differences between the two texts occur at the level of Tenor and the interpersonal metafunction: formality and distance. The WP text (Appendix 1) appears informal and people-oriented through the journalist/reader relationship, while the NCC text (Appendix 2) is construed as formal, less friendly, and distant by means of the scientist/reader relationship.

Mood choice and modality signal the different kinds of relations each text has established. First, the Finite connects the WP writer's proposition to the present tense, suggesting an immediate call-to-action, whereas the NCC writers' proposition is connected to the past tense. Then, negative polarity in the WP text (see Extract 1) indicates the writer's need to challenge what the reader may think about his propositions (Thompson 2013); negative polarity does not occur at all in the NCC text, which reinforces a sense of authority (Fang 2004). Subjects in the WP text signify groups of people – *we, the world, you* – while Subjects in the NCC text signify things – *temperature goal, Paris Agreement, COP15* (see Table 1). The WP text includes the reader through interactant pronouns, giving the impression that everyone should be involved; no interactant pronouns are used in the NCC text (see Figure 4). Finally, modality occurs more in the WP text (see Figure 3), which suggests the writer's need to negotiate his beliefs (Thompson 2013).

At the level of Field and the experiential metafunction occurs another noticeable difference: the numerous occurrences of nominalization in the NCC text (Appendix 2). Thus, the writers of both texts use language very differently to talk about the same event. Nominalization de-personalizes (Thompson 2013) the NCC text and makes it 'non-negotiable' (ibid.:246).

Finally, mode and the textual metafunction differ since the message in each text is organized differently. The many occurrences of textual Themes in the WP extract – *because, once, and, if, but* (see Table 13) – is suggestive of spoken language (Ravelli 2005), and therefore indicates an informal text. In the NCC text, lengthy thematic choices seem to increase formality (Fang 2004),

and Adjuncts in thematic position seem to increase distance by focusing on *how* rather than *who* (see Table 13).

8. Conclusion

The aim of this paper was to perform a comparison of two text extracts, a news report (*The Washington Post* 2016) and a scientific text (*Nature Climate Change* 2016), with similar subject matter: the Paris Agreement's temperature goal. Nevertheless, even when texts share similar subject matter, a difference in terms of Tenor and the interpersonal meaning 'create[s] a substantially different text' (Butt et al., 2000:5). The writers of each text interact very differently with their readers, and thus formality and distance distinguish the two texts. By analyzing the interpersonal, experiential and textual meaning choices with Halliday's SFG framework (Halliday & Matthiessen 2014), it has become clearer that language does something markedly different in each text.

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Appendices

Appendix 1: The Washington Post

'The World is Racing to Stop Climate Change. But the Math Still Doesn't Add Up'

This news story was published in the Energy and Environment section of the WP on November 3rd, 2016.

[1] The world is racing to stop climate change. [2] But the math still doesn't add up.

[3] The entire globe is moving fast to stop climate change. [4] The Paris climate agreement enters into legal force on Friday, and then shortly afterwards comes a first global meeting to start implementing it in Marrakech, Morocco. [5] (Yes, there's also a U.S. election in there somewhere that could, er, complicate things.)

[6] But this flurry of activity nonetheless faces a grim mathematical reality, a new report from the United Nations Environment Programme finds. [7] In essence, while the Paris agreement sets extremely ambitious temperature goals — holding the world's warming to "well below" 2 degrees Celsius above preindustrial levels, and striving for a 1.5 degree limit — current policies and promises alone have little chance of attaining them.

[8] Moreover, because of the unforgiving nature of carbon math — once you emit a ton of carbon dioxide, you can't get it back, and it accumulates steadily in the atmosphere — there is exceedingly little time to change course and increase ambitions.

[9] "It's just too little, and it's not happening quickly enough," said Jacqueline McGlade, UNEP's chief scientist. [10] "If we don't see emissions peaking by 2020, then the chances of getting to 1.5 degrees is vanishingly small."

[11] Such is the upshot of UNEP’s latest installment of its “emissions gap” report, perhaps the definitive study of how much the world is currently emitting, and how much it *can* emit to remain on course to meet its goals. [12] The difference between the two comprises the gap.

[13] Here are the details (warning, this stuff gets complicated quickly).

[14] Right now, due to causes ranging from deforestation to transportation, the world is emitting about 52.7 billion tons, or gigatons, of carbon dioxide equivalents per year as of 2014. [15] That’s mostly just plain carbon dioxide, but it also includes emissions of methane, nitrous oxide, and other greenhouse gases that are converted into units comparable to carbon dioxide. [16] If you leave those out, the pure carbon dioxide emissions are about 36 billion tons per year.

[17] However, to hold global warming below 2 degrees (at least with good odds), the world can emit no more than 1,000 gigatons of carbon dioxide from the year 2011 onwards — the famous carbon budget. [18] And given that it’s 2016 already, that number has already shrunk a good bit, by about 150 gigatons. [19] And of course, the carbon budget is even narrower to hold warming to 1.5 degrees Celsius.

[20] This is the logic behind the inescapable emissions “gap”: [21] If we want to hold global warming to 1.5 C, we need to be emitting only 38.8 gigatons of carbon dioxide equivalents by the year 2030. For 2 degrees C, there’s only slightly more leeway — 41.8 gigatons.

[22] The promises countries have made under the Paris agreement don’t remotely get there — at best, they’d have us at about 53.4 billion tons in 2030. [23] The emissions gap is therefore between 12 and 14 gigatons per year if you want to keep the planet at 2 degrees, and between 15 and 17 gigatons per year for 1.5 degrees, says UNEP.

Appendix 2: Nature Climate Change

'Science and Policy Characteristics of the Paris Agreement Temperature Goal'

This scientific report was published in the monthly scientific journal in September 2016.

[1] The Paris Agreement sets a long-term temperature goal of holding the global average temperature increase to well below 2 °C, and pursuing efforts to limit this to 1.5 °C above pre-industrial levels.

[2] The adoption of the LTTG in the Paris Agreement stems from a long-standing climate policy debate. [3] In 1996, the EU Environment Council was first to identify a global mean temperature (GMT) increase of 2 °C above pre-industrial levels as a limit not to be exceeded, based on the IPCC's Second Assessment Report. [4] This was subsequently confirmed by EU heads of government in 2005 and 2007, mainly informed by the IPCC's Third Assessment Report (TAR) in 2001. [5] Eventually, this 'not exceed' limit was taken up by the G8 in 2009.

[6] The gradual adoption of specific warming limits by political bodies can be linked to the evolution of the underlying scientific basis. [7] Although not comprehensive, progress in the understanding of climate impacts and their relation to GMT increase might be best illustrated by the temporal evolution of the IPCC's 'reasons for concern' (RFCs), a framework for aggregating impacts, risks and vulnerabilities that was first developed in 2001 for the TAR. [8] With scientific insights steadily progressing, assessments based on the IPCC's Fourth Assessment Report (AR4) and Fifth Assessment Report (AR5) have identified higher risks for all RFCs at lower temperature levels.

[9] Informed by the conclusions of the IPCC AR4, approximately 100 countries at the UNFCCC Copenhagen Conference (COP15) in 2009 were calling for warming to be limited to below 1.5 °C relative to pre-industrial levels. [10] Although COP15 itself was widely regarded as a failure, two politically durable outcomes from the Copenhagen Accord have ultimately translated into the Paris Agreement: first was the emergence of a long-term goal agreed at head-of-government level,

expressed then as an aim to hold the increase in warming below 2 °C, combined with a recognition that deep cuts in global emissions are required ‘according to science’. [11] Second, and directly linked, was the agreement to review the ‘hold below 2 °C’ long-term goal with a view to strengthening it, addressing the 1.5 °C limit called for by vulnerable countries.

[12] The hold below 2 °C goal was formally agreed upon in 2010 at the COP16 in Cancun and tied to a review of the adequacy of this limit with a view to examining 1.5 °C as an alternative. [13] Although this led to little or no reaction in scientific circles, a science-based review process under the UNFCCC was established: the structured expert dialogue (SED). [14] Based principally on IPCC AR5 science, the SED concluded that the “concept, in which up to 2 °C of warming is considered safe, is inadequate” and that “limiting global warming to below 1.5 °C would come with several advantages”. [15] At the same time, substantial research gaps with regard to 1.5 °C science were identified.